## Metamonzogranite 192567

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| **Person submitting samples:** Catherine Spaggiari / Dave Kelsey |
| **Affiliation:** Geological Survey of Western Australia |
| **Project Title:** Project Manager / Senior Geologist |
| **Sample Number(s) (including IGSN if one exists):** 192569 |
| **Mineral separation required? Yes or No:** Yes |
| **Date submitted:** May 2020 |

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| **GEOGRAPHIC AREA/ PROVINCE/ BASIN :** Eucla region; Nullarbor Plain / Madura Province | |
| **1:250k SHEET NAME:** Madura - Burnabbie | **NUMBER:** SH 52-13 |
| **1:100k SHEET NAME:** Madura Pass | **NUMBER:** 4334 |
| **LOCATION METHOD: (GPS: GDA94)** | |
| **ZONE:** 52 | |
| **EASTING:** 350264 | **NORTHING:** 6468083 |
| **LATITUDE:** -31.913275 | **LONGITUDE:** 127.416322 |

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| **STRATIGRAPHIC UNIT FORMAL NAME *:** Moodini Supersuite |
| **STRATIGRAPHIC UNIT INFORMAL NAME:** N/A |
| **LITHOLOGY:** Metamonzogranite |

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| **DRILLHOLE ID (if applicable):** MORC002 |
| **PROSPECT (if applicable):** Moodini |
| **DEPTH FROM (metres):** 449.10 |
| **DEPTH TO (metres)**: 450.00 |

* Stratigraphic Unit names can be searched and checked within the Australian Stratigraphic Units Database via the following link: https://asud.ga.gov.au/

### Dating Objective

***What is the geological question $^{40}Ar/^{39}Ar$ analysis will address?***

The ages of metamorphism and deformation events; to compare to the Top Up Rise samples.

***What type of age(s) are expected? (e.g. magmatic crystallisation, metamorphism, fluid alteration/mineralisation, cooling, shearing etc):***

Age or cooling age of deformation related to shearing.

***Mineral target(s) for dating:***

Biotite

***Estimated $^{40}Ar/^{39}Ar$ age (e.g. Cenozoic, Mesozoic, Paleozoic, Proterozoic, Archean – provide estimated numerical age range if possible):***

Mesoproterozoic, or younger. Younger than c. 1130 Ma. Possibly c. 1070 Ma, or younger.

### Sample Information

***Location description (e.g. a sample of x was collected from y, z km from abc town):***

Mundrabilla Shear Zone samples come from Moodini prospect drillcores, which were drilled close to the Eyre Highway, 48 km east of Madura, and 142 km west of Eucla.

***Lithological characteristics (rock description):***

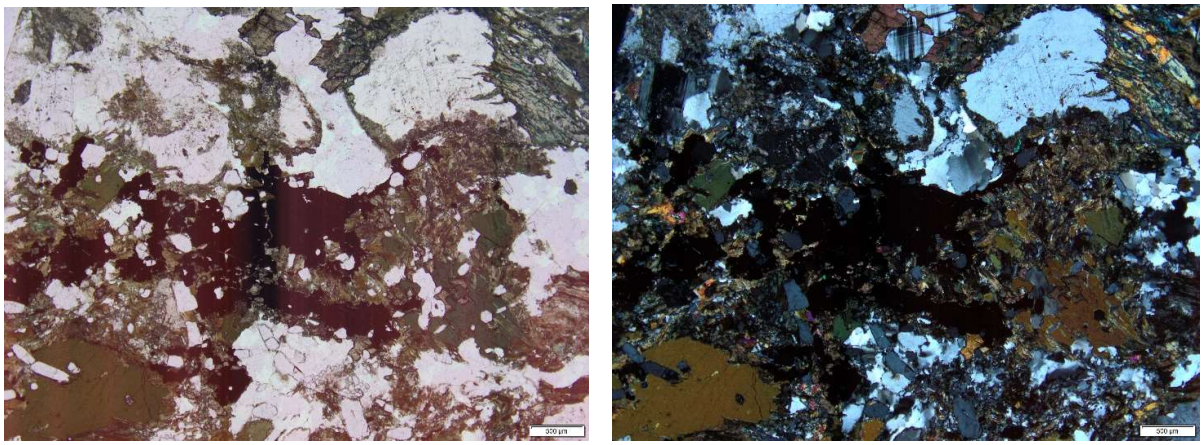
Mostly medium-grained seriate to porphyritic metagranite. Locally equigranular. Comprises K-feldspar, plagioclase, quartz, hornblende and biotite in variable proportions. Typically contains an L-tectonite rodded fabric that is subhorizontal. This sample is dominantly L-tectonite.

***Relative age constraints (pertinent geological relationships with surrounding rock units and any previous geochronology):***

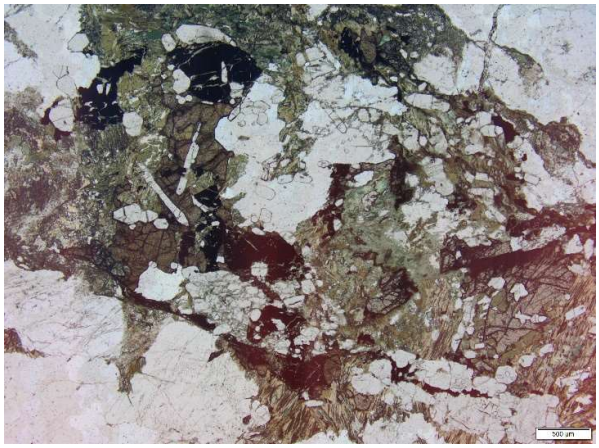
Two samples of metamonzogranite have SHRIMP U-Pb ages of 1132 ± 9 (GSWA 192566, MORCD002) and 1127 ± 7 (GSWA 192565, MORCD001).

***Thin section description (if available):***
This sample is also dominantly L-tectonite. In thin section the fabric doesn't look particularly strong because of the L-tectonite orientation. The rock is dominated by coarse-grained plagioclase that is partly altered to ?sericite. Quartz with reduced grain size and clear evidence of deformation (inequigranular-interlobate texture) is also abundant. Titanite occurs as coarse-grained blasts throughout the rock, with an anhedral shape. Biotite, epidote, olive-green hornblende, blue-green amphibole, prehnite and apatite all typically occur together in a 'matrix' between plagioclase grains. Hornblende, Fe-Ti oxide and titanite tend to occur as 'porphyroblasts' whereas biotite, epidote and prehnite tend to occur as finer-grained minerals around these coarser ones. Rare discontinuous veins of calcite occur in one corner of the thin section.

***Photograph(s) e.g. field site, hand-specimen, photomicrograph:***



Hbl-FeTi-Ttn-Ap-Pl-Qz-Bt-Ep-Preh-Ep (PPL and XPL)



*Fsp and Hbl porphyroclasts, Qz-Bt-Ep fabric*

***Relevant bibliographic references:***

Spaggiari, CV, Smithies, RH, Kirkland, CL, Wingate, MTD, England, RN and Lu, Y 2020, Stratigraphic and co-funded drilling of the Eucla basement — the Proterozoic geology beneath the Nullarbor Plain: Geological Survey of Western Australia, Report 204, 147p.

Spaggiari, CV, Smithies, RH, Kirkland, CL, Wingate, MTD, England, RN and Lu, Y 2018, Buried but preserved: the Proterozoic Arubiddy Ophiolite, Madura Province, Western Australia: Precambrian Research, v. 317, p. 137–158.

**Geochronology Records:**

Wingate, MTD, Lu, Y, Kirkland, CL and Spaggiari, CV 2015b, 192565: metamonzogranite, Moodini prospect; Geochronology Record 1269: Geological Survey of Western Australia, 4p.

Wingate, MTD, Lu, Y, Kirkland, CL and Spaggiari, CV 2015c, 192566: metamonzogranite, Moodini prospect; Geochronology Record 1270: Geological Survey of Western Australia, 4p.

**Company Reports:**

Sasi, R 2011, Annual geological report for the period 12/03/2010 to 12/03/2011, Exploration Licence E69/22628: Venus Metals Corporation Ltd: Geological Survey of Western Australia, Statutory mineral exploration report A093851, 23p.

Sasi, R 2012, Annual geological report for the period 12/03/2011 to 12/03/2012, Exploration Licence E69/22628: Venus Metals Corporation Ltd: Geological Survey of Western Australia, Statutory mineral exploration report A093851, 31p.